UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,232	09/09/2003	Hiroshi Shingai	P24175	8832

7055 7590 02/13/2006

GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER	
ANGEBRANNDT, MARTIN J	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 02/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/657,232	SHINGAI ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/9/03,2/6/046/30/05,7/7/05*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/9/03,2/6/046/30/05, 7/7/05*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The examiner would like to point out that it has been held in the courts that the "applicant has [an] obligation to call the most pertinent prior patent to [the] attention of [the] Patent Office in a proper fashion." [Penn Yan Boats, Inc. V. Sea Lark Boats, Inc., et al. 175 USPQ 260 (DC SFla 1972)]. The examiner would appreciate the applicant identifying why the cited reference is pertinent to the claimed optical recording media including relevant portions of the document cited. The applicant has cited approximately 100 references, some of which appear to be of limited probative value.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3 and 6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Matsunaga et al., "Structural Study of a $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ quadruple compound utilized for phase change optical disks. Phys. Rev. B Vol. 64 pp. 184116 to 184122 (2001).

See the entire document. This composition has an A7 structure as discussed in table III.

5. Claims 3 and 6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Horie et al. "materials Characterization and application of eutectic SbTe based phase change optical recording media, Proc. SPIE 4342 pp. 76-87 (2002). (presentation given 2001)

See figure 2, which shows the hexagonal structure (of which A7 is a type, see Matsunaga et al., above) and the axis length of 4.32 for a and 11.03 for c.

6. Claims 3 and 6 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Shinkai et al. JP 2003-112477.

See examples described in table 1 [0081].

7. Claims 3 and 6 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Horie et al. '305

See examples in table 1

8. Claims 3 and 6 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Harigaya et al. '203

See examples in table 6.

9. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shimanuki et al. JP 64-025328 (aka JP 01-025328).

See sample 5 in table 1, which has a composition of $Mn_{0.4}Sb_{0.4}Te_{0.2}$. Note that this is similar to the first embodiment of the instant specification. The formula embraces $Sb_{0.55}Te_{0.20-0.3}Mn_{0.15-25}$. (front page and abstract) for y = 0.55 and x = 0.2-0.3, D= Sb and A = Te.

It is not clear if the exemplified composition has the recited crystal structure. The examiner holds the position that it does, thereby anticipating the claim, or if this is not found to be the case or is not upheld, the examiner alternatively holds that it would have been obvious to one skilled in the art to modify the recording medium by using a $Sb_{0.55}Te_{0.20\text{-}0.3}Mn_{0.15\text{-}25}$ layer in place of the $Mn_{0.4}Sb_{0.4}Te_{0.2}$ layer with a reasonable expecation of forming a useful optical recording medium.

10. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shingai et al. '292.

Example 10 has a composition of $Mn_{16}Sb_{64}Te_{20}$. The teachings embrace $Sb_{0.56}Te_{0.2\text{-}0.4}Mn_{0.2\text{-}0.4}$. [0031]

It is not clear if the exemplified composition has the recited crystal structure. The examiner holds the position that it does, thereby anticipating the claim, or if this is not found to be the case or is not upheld, the examiner alternatively holds that it would have been obvious to one skilled in the art to modify the recording medium by using a $Sb_{0.56}Te_{0.2\text{-}0.4}Mn_{0.2\text{-}0.4}$ layer in place of the $Mn_{16}Sb_{64}Te_{20}$, layer with a reasonable expecation of forming a useful optical recording medium.

11. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Shigai et al. '278.

See examples in experiment 2 corresponding to points 13 and 18 in figures 3 and 4. These appear to be $Mn_{25}Sb_{55}Te_{20}$ and $Mn_{14}Sb_{56}Te_{30}$ respectively.

12. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsunaga et al., "Structural Study of a $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ quadruple compound utilized for phase change

optical disks. Phys. Rev. B Vol. 64 pp. 184116 to 184122 (2001), in view of Tominaga et al. '012.

Tominaga et al. '012 teach $Ag_{3-13}In_{2-8}Sb_{45-87}Te_{8-34}$ which have less than 5% of additives, such as Ti, Zr, Hf, V, Nb, Ta,W, Mo and/or Mn added to them to improve reliability and other properties (2/59-62 and 3/15-21,3/30-54)

It would have been obvious to one skilled in the art to modify the $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ composition of Matsunaga et al., "Structural Study of a $Ag_{3.4}In_{3.7}Sb_{76.4}Te_{16.5}$ quadruple compound utilized for phase change optical disks. Phys. Rev. B Vol. 64 pp. 184116 to 184122 (2001) by adding at least a small amount of Mn to improve the reliability and such as taught by Tominaga et al. '012 with a reasonable expectation of maintaining the A7 crystallographic structure. The examiner notes that the recited x ray bands are due to Mn-Sb.

13. Claims 1-6 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Suzuki et al. JP-2002-237230.

See the media of sample 1, in $Mn_5Ge_4Sb_{73}Te_{18}$ in table 3.

14. Claims 1-6 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Harigaya et al. EP 12609783.

See the media of samples 1-15, in MnGeSbTe in table 1.

15. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Harigaya et al. '346.

See the media of samples 1-15, in MnGeSbTe in table 1.

16. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is

appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

17. Claims 3 and 6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 5 of copending Application No. 11/181886 (US 2006/0018241). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims embrace the overlapping range of c/as being 2.670-2.676.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

18. Claims 3 and 6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-5 of copending Application No. 11/013470 (US 2005/0136209). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims embrace the overlapping range of c/as being 2.670-2.676.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

19. Claims 3 and 6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-2 of copending Application No. 10/829355 (US 2004/0213125). Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims embrace the overlapping range of c/as being 2.590-2.676.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shingai et al. '105, Shingai et al. '689 and Kojima et al. '533 teache Mn containing recording layers.

Hanoka et al. JP 2002-264513 and Yuzurihara et al. JP 11-070737 teach AgInSbTe recording layers and are cumulative to the above references.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

02/03/2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) An optical recording medium that includes a phase change recording layer where reversible phase changes between a crystal phase and an amorphous phase are used,

wherein the recording layer includes at least Sb, Mn, and Te and, in a state corresponding to the crystal phase, has a structure where one diffracted ray is detected by X-ray diffraction as being present in each of three spacings (Å) of 3.10±0.03, 2.25±0.03, and 2.15±0.03, in a range of between 3.13 and 2.12 spacing inclusive, with diffracted rays not being detected in other ranges within the 3.13 to 2.12 spacing range.

2. (Original) An optical recording medium according to Claim 1,

wherein when indexing as a hexagonal lattice is performed in a state corresponding to the crystal phase, the recording layer has a structure where a lattice plane corresponding to the diffracted ray present in a range of the 3.10±0.03 spacing is capable of being indexed as a hexagonal (012) plane, a lattice plane corresponding to the diffracted ray present in a range of the 2.25±0.03 spacing is

capable of being indexed as a hexagonal (104) plane, and a lattice plane corresponding to the diffracted ray present in a range of the 2.15±0.03 spacing is capable of being indexed as a hexagonal (110) plane.

3. (Original) An optical recording medium that includes a phase change recording layer where reversible phase changes between a crystal phase and an amorphous phase are used,

wherein when indexing has been performed for a hexagonal lattice in a state corresponding to the crystal phase, the recording layer has a structure where an axial ratio *c/a* of a *c* axis length to an *a* axis length is between 2.558 and 2.676 inclusive.

4. (Currently Amended) An optical recording medium according to Claim 1 ~~any of Claims 1 to 3~~, wherein in the state corresponding to the crystal phase, the recording layer is constructed of a single phase with an A7 structure.

5. (New) An optical recording medium according to Claim 2, wherein in the state corresponding to the crystal phase, the recording layer is constructed of a single phase with an A7 structure.

6. (New) An optical recording medium according to Claim 3, wherein in the state corresponding to the crystal phase, the recording layer is constructed of a single phase with an A7 structure.